

## ABSTRACT OF THE DISCLOSURE

A reinforced composite system for constructing insulated concrete structures comprising, panels having a foam plastic core between outside and inside reinforcement layers, reinforcement layers substantially strengthen the panels during material handling and construction, greatly reducing deflection of the panels between studs when placing concrete allowing walls to be filled in one lift. Panels are placed horizontally in an opposing and parallel spaced-apart relation. Opposing panels are placed end to end in rows and stacked vertically, rows of panels being staggered from each other so panel ends in adjacent rows do not line up vertically. Vertical studs are embedded in panels extending the full height of the panels, each stud having a flange for receiving mechanical fasteners and groove for receiving spreaders. A plurality of spreaders at each stud location extend between opposing panels and slidably engaging the studs in opposing panels. Spreaders are stacked vertically in such a manner as to engage studs half their height above and below the horizontal joints between rows of panels. Each spreader has opposing flanges connected by horizontal members, horizontal members having multiple formations, when spreaders are stacked the formations compliment each other allowing wall reinforcement bars to be restrained in any preferred location. Hollow horizontal stiffeners may be utilized to accommodate electrical wiring. Locations of vertical studs are shown by markings on the exterior of panels. Hinged corner forms and bearing ledge forms can be shipped flat and rotated into position on site.